



web site: Rehabworks.ksc.nasa.gov

The Valsalva Maneuver *by Erik Nason*

OK class, the new medical term for the day is “Valsalva maneuver”. No Kenny, it is not a dance. It involves something that we all do everyday. That something is breathing. Most of us take breathing for granted and therefore give the saying “don’t know what you got until it’s gone” a brand new meaning. Breathing, as we all know, is very important. So why do we forget to do it when we are weight lifting or performing a strenuous activity? Have you ever been spotting your friend as he or she is doing a bench press and you notice that their face is turning really red? Almost like their head is going to explode! Well that is not right. This is the Valsalva maneuver in progress. The Valsalva maneuver is defined as increased chest and abdominal pressure by a forced exhalation against a closed mouth (or glottis). Let me explain.....

First, let’s review the breathing process. We start with an inspiration followed by an exhalation. During inspiration, the chest cavity increases in size because of the raising of the ribs and lowering of the diaphragm as air moves into the lungs. During exhalation (breathing out) the ribs swing down and the diaphragm returns to a relaxed position. This reduces the volume of the chest cavity and air rushes out.

The chest is made up of a group of muscles that surround the rib cage. The muscles are mainly used to force air out of the lungs. Just think of your hands placed around a balloon with a valve on the end of it. If you squeezed the balloon between your hands, the air in the balloon would be forced out of the valve. The chest muscles do the same thing. They increase the chest cavity pressure forcing air from the lungs. If you hold your breath then this forced exhalation against a closed windpipe is termed the Valsalva maneuver. The Valsalva maneuver commonly occurs in weight lifting and other activities that require a rapid and maximum application of force for a short duration (for example, an individual bench pressing, squats, etc.).

The increased chest cavity pressure can cause some physiological consequences. The increased chest pressure can produce dizziness, “spots before the eyes”, and even fainting. Blood pressure is also altered during the Valsalva maneuver. With the onset of a Valsalva maneuver, at the start of a lift, blood pressure rises abruptly as the chest cavity pressure increases. This can be dangerous for individuals who have been diagnosed with a heart illness or are being treated for high blood pressure. In addition, patients who have had abdominal surgery or herniation of the abdominal wall and geriatric patients are also at a high risk of injury.

Here is an example of proper breathing during a bench press. During the down phase of the bench press the individual should inhale. As the individual pushes the weight back up to the starting position, the individual should exhale. The individual should not hold his or her breath during the up phase. This is where the Valsalva maneuver would occur.

All in all, the next time you go to the weight room remember not to take breathing for granted. Focus on proper breathing. Remember, holding your breath during a strenuous exercise is not only an improper lifting technique, but most of all it can be dangerous to your health. Try to count, talk or breathe rhythmically during exercise.



Feeling Blue?

Changing your thoughts may help change your mood. Being aware of negative thoughts and replacing them with rational ones is the first step to controlling mild depression. Rather than focusing on what’s wrong with you and the world, dwell on what’s right. Here are some positive steps...

- * **Spend time with other people, especially those who are optimistic and like to laugh. It’s usually better than being alone.**
- * **Volunteer your time and talents to a cause of your choice. This will help restore your sense of purpose.**
- * **Avoid alcohol, which can deepen your melancholy.**
- * **Get some exercise to relieve stress and gain mental and physical strength.**
- * **If life seems unfulfilling, find ways to express your creativity. This could mean taking lessons in a sport or learning a new hobby.**
- * **Don’t suppress your feelings. Tears and communication can be healing.**
- * **Trust your own strength but don’t hesitate to ask for help. If depressive episodes increase or become severe, you may need the guidance of a health professional. Start by talking with your primary care physician**

Source: National Foundation for Depressive Illness; National Mental Health Association

Check out our web site at
atlas/med/fitness
to find out about our educational and motivational programs, aerobics classes, enrollment, interesting fitness links and more!



KSC Fitness Center Activities

Aerobics Schedule: May/June

Mondays

11:30-12:00 Muscle Pump (Upper Body)
12:00 - 12:30 Flexibility Plus
4:00 - 4:45 Interval Aerobics
5:00 - 5:45 Beginning Step Aerobics

Tuesdays

11:30 - 12:00 Step Aerobics
12:00 - 12:15 Abdominals
4:00 - 4:45 Specialty Class

Wednesdays

11:30 - 12:00 Muscle Pump (Lower Body)
12:00 - 12:30 Flexibility Plus
4:00 - 4:45 Step Aerobics
5:00 - 5:45 Interval Aerobics

Thursdays

11:30 - 12:00 Step Aerobics
12:00 - 12:15 Abdominals
4:00 - 4:45 Specialty Class

Fridays

12:30 - 1:00 Low Impact Aerobics
3:45 - 4:30 Step Aerobics

**May 6th Step Aerobics and Abdominals are canceled due to “Exercise and Pregnancy” workshop

May 19th Muscle Pump and Flexibility Plus are canceled due to “Women on Weights” workshop

Visit our website at : atlas/med/fitness for class descriptions

May: National High Blood Pressure Month

Friends For Fitness: May 3rd - 28th Do you think about exercising, but lack the motivation to start a program and stick with it? Do you get bored during exercise and stop? Would you exercise if it was just “more fun”? Do you find excuses not to exercise, and use every one of them? If you answered “yes” to any of the above questions, then you are a prime candidate for our new “Friends For Fitness” program! Stop by or call either Fitness Center for details and get in shape once and for all!

Exercise and Pregnancy Workshop: May 6th, 11:30 - 12:30 p.m. You and your baby deserve good health! Learn proper nutrition, exercise recommendations and pre- and post-natal health according to the American College of Obstetrics and Gynecology. Call 867-7829 to register.

Step Aerobics Workshop: May 13th, 5:00 - 6:00 p.m. Learn to step! The O&C Fitness Center will be offering

a Step Aerobics Workshops for anyone interested in learning to do Step Aerobics. This workshop will cover the basic terminology and mechanics of stepping. If you’ve always wanted to learn Step Aerobics, this workshop is for you! Please call the Fitness Center at 867-7829 to sign up - space is limited.

Lunch and Learn: “Functional Fitness”, May 14th and 28th, 12:00 p.m. Everyday activities become easy when you strengthen your “core” muscles! Bring your lunch and learn strength, stabilization and preventative exercises for the muscles you use everyday! Sign up by calling the KSC Fitness Center at 867-7829.

Indoor Triathlon: May 17th - May 28th The KSC Indoor Triathlon consists of either a Sprint Triathlon or a Distance Triathlon. Individuals may participate in either the Sprint or Distance Triathlon. Relay teams may only participate in the Distance Triathlon. The order of events is as follows:

1. Sprint Triathlon - 5 mile bike immediately followed by a 1250 meter row immediately followed by a 1 mile run.
2. Distance Triathlon - 10 mile cycle immediately followed by a 2500 meter row immediately followed by a 2 mile run.

Contact a Fitness Center staff member for further details and to schedule your event time.

Women on Weights Workshop: May 19th, 11:30 - 12:00pm and May 20th, 4:45 - 5:45p.m. Attention all women! Strength training is an important, often neglected component of physical fitness. In this seminar you will learn the basic strength training principles and receive hands-on training in the free weight area. Call 867-7829 to register.

June: National Dairy Month

“Adopt A Couch Potato” Motivational Program: June 7th - July 2nd The Centers for Disease Control report that less than 10% of adults exercise at the level recommended by the Surgeon General. If you would like to “get off the couch” or help someone you know become more active, join the American Heart Association’s “Adopt-A-Couch-Potato” program. This is a 4 week event for active and inactive people alike. For more information stop by the KSC Fitness Centers or call 867-7829.

Super Safety Day: June 17th

Women on Weights: June 22nd, 5:45 - 6:45 a.m. Call 867-7829 to sign up.

Lunch and Learn: “Becoming An Athlete”, June 25th, 12:00 p.m. Learn how to take your current fitness program and elevate it to the level of competition or racing. Bring your lunch and learn how to take it one step further on June 25th. Sign up at the Fitness Center, 867-7829.

TO MINIMIZE PAPER COSTS, PLEASE ROUTE THIS NEWSLETTER TO ALL EMPLOYEES AT THIS MAIL STOP.

The Facts About Body Fat

Everyday, people become more and more curious about how they can improve their health. With curiosity comes questions, and one of the most common questions we receive at the KSC Fitness Centers is, "What's the best way to measure body fat?" Recently, the market has become flooded with body fat measuring devices, and this has the average consumer confused and concerned. Before you rush out and buy the latest and greatest, read on and weigh the facts.

Waist-to-hip ratio: The part of the body where excess fat accumulates is important for health reasons. Studies have shown that people who have more fat in the abdominal area rather than other areas of the body are at higher risk for heart disease, diabetes and metabolic disorders. The waist-to-hip ratio is a way to assess this risk. Simply divide your waist circumference by the hip circumference. If the ratio is greater than .95 for men or greater than .80 for women, this is considered high risk.

Body Mass Index: This method is similar to waist-to-hip ratio in that it provides preliminary, yet important wellness information. Both waist-to-hip ratio and body mass index can be used as preliminary assessments of body fat. The following methods are more complicated and believed to be more accurate.

Hydrostatic (Underwater) Weighing: This method is considered the most accurate technique for estimating body fat. The individual is seated on a chair attached to a scale suspended over a special tank. The person is submerged underwater and forcefully exhales completely, blowing out as much air as possible. While underwater, the person's weight on the scale is recorded, then plugged into a formula which can estimate percent body fat. While this method is considered the "gold standard", it's important to remember that body fat measurement on a living being is always an estimate. Even in this method certain factors, such as estimated residual lung volume, must be taken into account.

Skinfold Method: The skinfold method, or pinch test, is widely used and validated. It is very accurate when performed by experienced, well-trained examiners. Special calipers are used to measure the skin and subcutaneous fat thickness at selected sites on the body. The sites will vary depending on which equation is used.

Circumference and Bony Diameters: A variety of equations predicting body fat percentage have been developed using circumference, or girth, measurements performed with a tape measure, or bony diameters measured with a skeletal anthropometer. Body fat estimations using circumferences have been shown to be somewhat accurate if the appropriate equations and constants are used.

Bioelectrical Impedence: Electrodes are placed on select sites of the body. The body's resistance to electricity is measured by sending a mild, painless electrical current through the body. A prediction equation that includes the resistance value from the measured impedance plus height squared is used to estimate lean body mass or total body water. Because bioelectrical impedance measures the body water's resistance to an electric current, there are many factors that can affect an accurate measurement, such as hydration level, food

intake, exercise, skin temperature and menstrual cycle stage. However, the accuracy and reliability of a bioelectrical measurement is usually good when utilizing proper protocol such as placing the individual being tested on a non-conducting surface, restriction of food intake for 3-4 hours prior to testing, normal hydration status and proper placement of electrodes.

Infrared Interactance: This somewhat accurate method, perhaps best known by its brand name of Futrex 5000, is based on the fact that the ability of a body tissue to absorb and reflect infrared light depends on its composition. A fiber optic probe is placed on the skin (usually at the biceps) and a near infrared beam penetrates the underlying tissue to a depth of 4cm. The probe collects any reflected energy and returns it to the spectrophotometer.

Bod Pod: As one of the latest methods for estimating body fat, this technique measures body volume by air displacement. This procedure estimates a person's volume based on the differences found between empty chamber air volume and the air volume with the individual inside. A formula is then used to estimate body fat.

Source: *Fitness Gets Personal, AFAA*

Did you know . . . Just 36 percent of high school students perform 20 minutes of vigorous physical activity three times a week.

Look How Much Money You'll Save...

Atlantic Nautilus
\$99 for 3 months
Executive Personal Fitness
\$78 down, \$40/month
Fitness Plus
\$100 down, \$37/month
KSC Fitness Centers
FREE, FREE, FREE
Lady Of America
\$45 down, \$35.95/month
Parrish Health and Fitness Center
\$75 down, \$30/month
World Gym
\$50 down, \$29.15/month

Cross Training For Fun and Fitness

Tired of the same old workout? Looking for a level of fitness that your current exercise routine can't offer? Are you experiencing nagging injuries that just don't seem to heal? If you answered yes to any of these questions, you are a likely candidate for cross training. Cross training is simply a way of adding variety to your exercise program. You can vary your aerobic routine and incorporate some muscular strength and flexibility training as well.

If you think cross training is new, think again. Athletes have been cross training since the days of the Olympic decathlons and pentathlons of ancient Greece. The past decade has seen the popularity of the triathlon reach international proportions, introducing the concept of cross training to even the most recreational athletes.

What's the point?

The benefits of cross training are numerous. It reduces the risk of injury because the same muscles, bones and joints are not continuously subjected to the stresses of the same activity.

Cross training also adds variety to your workouts, making your routine more interesting and easier to stick with. For the athlete, it provides a break from the rigors and stresses of single-sport training. Cross training will improve your overall fitness and, over an extended period of time, may ultimately lead to improved performance.

The Nuts and Bolts of Cross Training

Whether you are new to exercise or a competitive athlete, the essentials of cross training are the same. You can choose to vary your routine from workout to workout, or simply add a new component within your existing exercise program.

One of the easiest ways to start cross training is to alternate between activities - walking one day, swimming or bicycling the next. Or, you can alternate these

activities within a single workout, spending five minutes on a treadmill, five minutes on a stationary cycle, and so on for a total of 20 minutes.

More experienced exercisers might begin an hour-long workout with a 15-minute jog to a nearby pool. After a 20-minute swim and perhaps a few minutes of calisthenics, they can finish off their workout with a 15-minute jog back home and several minutes of flexibility exercises.

Get Creative With Cross Training

If you're looking to increase your endurance level, try alternating low-level aerobic activities, such as 20 minutes of stationary cycling, with 10 minutes of higher-intensity exercise, such as stair-stepping or jumping rope. Gradually increase the amount of time you spend on the more intense activity.

These formulas can be used with just about any type of activity - as long as you enjoy it. Combining a group of aerobic activities into one workout at steady or various intensities is an excellent way to fight the boredom that comes from the same daily workout routine.

All exercise sessions, whether they involve cross training or not, should begin and end with low-level aerobic exercise and stretching to effectively warm up and cool down. And remember, it's always a good idea to check with your doctor before beginning a new exercise program.

Source: *American Council on Exercise "Fit Facts"*



Exercise of the Month

A NEW WAY TO BOOST YOUR BOTTOM LINE

The Move

The V Hip Rotator works your buttocks and outer hips for a firm, shapely look.

The Payoff

A tighter tush that looks great and helps you perform better in sports like hoops and running; strong hip abductors that stabilize your pelvis to help prevent knee and back problems.

- * Sit on floor. Tie an elastic band around both legs, just above your knees. Lean back on your elbows, legs straight in front of you, ankles 12 inches apart. Contract you abdominals and buttocks throughout the entire move.
- * Separate ankles about 3 feet apart, keeping legs parallel and knees pointed up.
- * Rotate legs outward from your hips as a unit (don't let lower legs twist at knees), so knees point outward, transferring leg weight to the outside of your heels.
- * Separate ankles another foot. Hold for 4 counts; slowly return to starting position.
- * When you can do 12 reps with proper form, separate your ankles farther, switch to a higher-resistance band, or add another 8-rep set. Rest at least 3 minutes between sets.

WEBSITE: <http://atlas/med/fitness>

By: Jean Myers